

with the third-generation cephalosporins. First, for the treatment of pneumococcal or meningococcal meningitis, penicillin or chloramphenicol remain the recommended antibiotics. Second, other Gram-positive cocci, in particular *Staphylococcus aureus*, are resistant to the newer cephalosporins. Third, the use of chloramphenicol apparently interferes with the activity of cefotaxime, which led to treatment failure in a patient with meningitis due to *Klebsiella*. Chloramphenicol may similarly interact with other third-generation cephalosporins. Fourth, not all Gram-negative species and not all organisms of any particular species are sensitive to these agents. For example, there are case reports of *E coli* resistance to moxalactam. And most *Pseudomonas* strains are resistant, as are all *Acinetobacter*, enterobacter and enterococci. Finally, as mentioned previously, *Listeria* infections should be treated with ampicillin.

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Indications for Hyperbaric Oxygen Therapy

HYPERBARIC OXYGEN THERAPY, whereby a patient breathes 100% oxygen at an atmospheric pressure greater than sea level, has been the mainstay in the treatment of decompression sickness and gas emboli in divers. It is also an emerging treatment for a number of other medical indications.

The Hyperbaric Oxygen Therapy Committee of the Undersea and Hyperbaric Medical Society has classified the uses of hyperbaric oxygen into "accepted" and "investigative" indications, with a "special category" for clinically controversial indications. Accepted indications are listed in the table, while the list of investigative indications can be found in the committee's report. For some conditions, such as prophylaxis for osteoradionecrosis, the use of hyperbaric oxygen is primary therapy, while for other indications it is adjunctive to other interventions, such as for chronic refractory osteomyelitis, where antibiotics and definitive surgical therapy

must also be used. The adjunctive use of hyperbaric oxygen for thermal injuries remains controversial.

Newly established has been the ability of hyperbaric oxygen to statistically significantly reduce the development of osteoradionecrosis after tooth removal from previously irradiated jaws. There has been a reduction from 29.9% to only 5.4% in the development of the disorder when hyperbaric oxygen was used before and after the extraction, compared with a penicillin-treated study group. Extraordinary cost-savings were also shown.

Additional recent developments in the field are the demonstration of the effectiveness of hyperbaric oxygen for treating radiation-induced hemorrhagic cystitis and a new classification and staging system for osteomyelitis, to facilitate further study uniformity and allow the proper selection of patients for therapy.

Case selection is important in most of the listed categories, and early consultation with a physician experienced in the treatment of patients with hyperbaric oxygen should be sought.

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Cardiopulmonary Resuscitation and Defibrillation

EVERY FIVE OR SIX YEARS the American Heart Association convenes a national conference to revise and update the standards for cardiopulmonary resuscitation (CPR) and advanced cardiac life support. Such a meeting (the third since 1973) was held July 1985 in Dallas, and the standards and guidelines were published in *The Journal of the American Medical Association*. (A complete copy of the "Standards and Guidelines for Cardiopulmonary Resuscitation [CPR] and Emergency Cardiac Care [ECC]" may be obtained from local chapters of the American Heart Association.)

The new standards for CPR simplify the technique. First, one-person CPR will be emphasized for layperson CPR instruction. Second, ventilations will no longer be "stacked" but rather given as two sequential breaths over two to three seconds (1 to 1½ seconds per breath), and the use of four initial breaths has been dropped with two breaths being used throughout. Third, the rate of chest compressions has been increased to a rate of 80 to 100 per minute. The ratio of 15 compressions to 2 ventilations is maintained. For two-person CPR there should be a pause in chest compressions while ventilation occurs. The ratio of five compressions to one ventilation is maintained.

The new guidelines for advanced cardiac life support emphasize the importance of rapid defibrillation for ventricular fibrillation. For ventricular fibrillation the sequence consists of a 200-J defibrillatory shock, and if ventricular fibrillation persists, a second shock of 200 to 300 J and, if necessary, a third shock of as much as 360 J. Only then, if fibrillation persists, should pharmacologic therapy begin with the use of epinephrine and antiarrhythmics. Defibrillation, assuming a

TABLE 1.—Accepted Indications for Use of Hyperbaric Oxygen

Acute air or gas embolism
Carbon monoxide or cyanide poisoning
Crush injuries and compartment syndromes
Decompression sickness
Enhancement of healing in selected problem wounds, particularly in some diabetic wounds
Exceptional blood loss anemia
Clostridial gas gangrene
Necrotizing soft tissue infections, such as crepitant anaerobic cellulitis, progressive bacterial gangrene, necrotizing fasciitis, nonclostridial myonecrosis and Fournier's gangrene
Chronic refractory osteomyelitis
Radiation necrosis of bone or soft tissue
Dental extraction from irradiated bone
Nonhealing of skin grafts or flaps
Actinomycosis